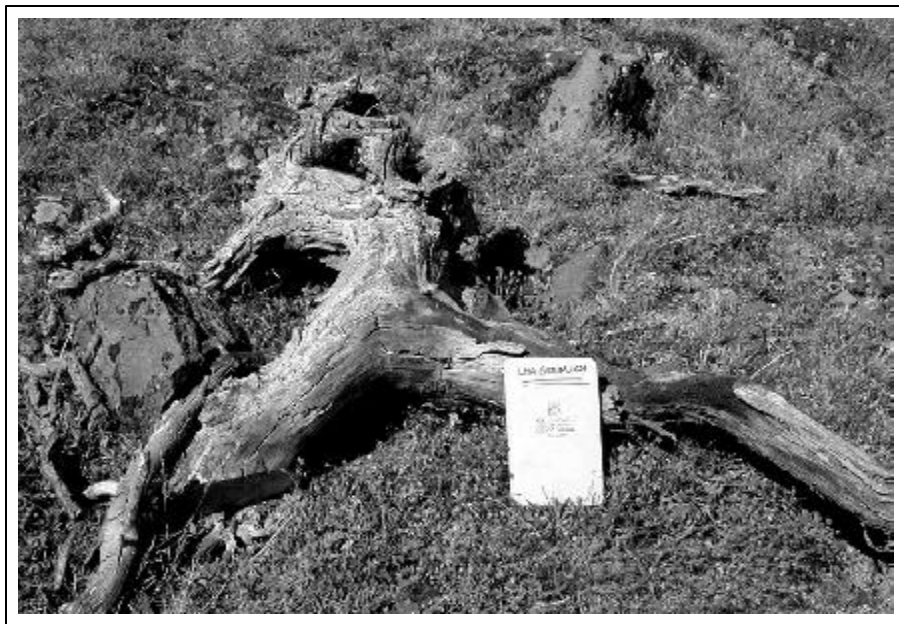


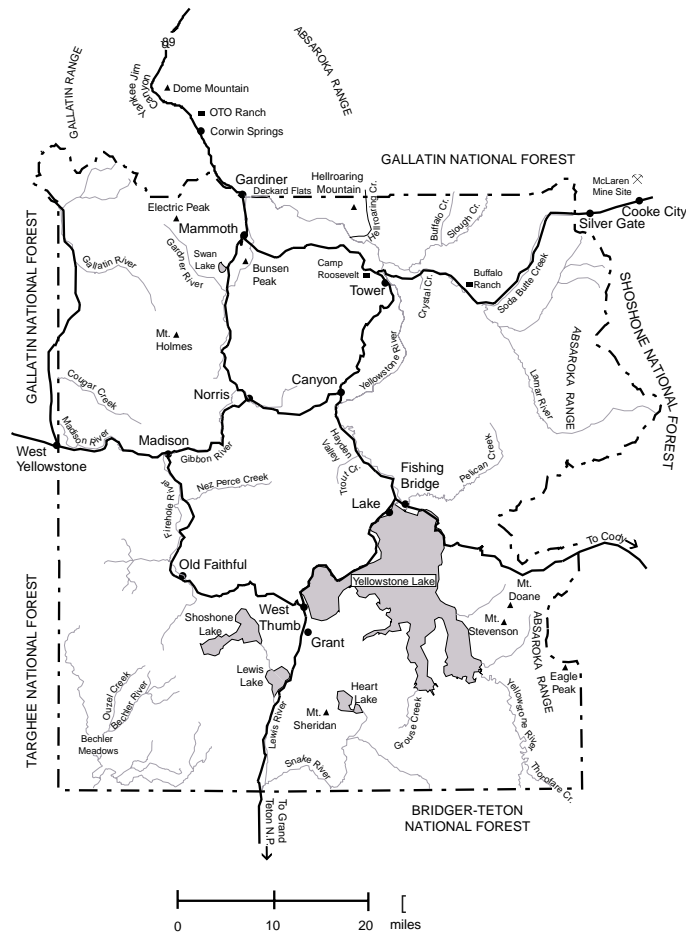
# **1999**

## **INVESTIGATORS' ANNUAL REPORTS**



## **YELLOWSTONE NATIONAL PARK**

# YELLOWSTONE NATIONAL PARK



## Yellowstone Center for Resources

P.O. Box 168

Yellowstone National Park, Wyoming 82190

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YCR Annual Report: YCR-IAR-2000



Cover: In 1999, scientists found the last remnants of this whitebark pine that grew centuries ago above modern timberline. Tree rings in this piece of ancient wood and others like it provide information about regional climate changes over the last 1,000 years. Remnants from several species of trees are preserved in Yellowstone's highlands, allowing scientists to analyze both moisture and temperature patterns during prehistoric times.

Acknowledgments: The National Park Service thanks the researchers that have contributed vastly to our understanding and knowledge of this special place.

# FOREWORD

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Science permeates nearly every aspect of Yellowstone management. Wildlife managers require answers to questions like how many grizzly bears exist in the Greater Yellowstone Area and what can be done to make the park safer for both bears and visitors? How does brucellosis in bison and elk differ from that in domestic cattle? Why has trumpeter swan reproduction declined? Historical research and archeological studies help us better understand the stories behind American Indian artifacts and historic buildings. Decisions on the best techniques for preserving these priceless objects also result from scientific inquiry. The social sciences help park managers develop better strategies for visitor use management by assessing public opinion, visitor satisfaction, and social carrying capacities.

As one of the few landscapes remaining in the continental U.S. with all of its original wild components functioning with minimal human interference, Yellowstone provides superb opportunities for close study of a naturally functioning ecosystem. Nonetheless, Yellowstone lacks the funds to do all of the needed research itself, and is dependent to a large extent on research done by scientists from other government agencies, academic institutions, and the private sector. The results of this research are important to non-park areas as well as to the park itself, because Yellowstone provides an ecological baseline from which the effects and influences of humans on the landscape can be assessed and compared.

In 1999, 256 research projects were approved; 71 were new, and 185 were continued from previous years. About 30 percent of all hypothesis-driven research in Yellowstone attempted to answer questions related to the park's wildlife. Nearly 20 percent of hypothesis-driven research related to microorganisms, and another 20 percent was dedicated to geology. Studies of the park's aquatic systems and plant populations each accounted for another 10 percent of research projects. The remaining projects included important endeavors such as archeological surveys, air quality studies, fire conditions monitoring, and paleontology. In addition, 10 percent of all research permits were not driven by the search to prove or disprove a hypothesis. These permits supported the education of future scientists by allowing students and their teachers to conduct simple scientific studies in the park.

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